Operating Instructions

for

Paddle Flow Monitor

Model: PSR-..., PSE-...

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Manufactured and sold by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim
Tel.: +49(0)6192-2990
Fax: +49(0)6192-23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.
The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

Machine guidelines 2006/47EC

No CE mark

By usage in machines, the measuring unit should be used only when the machines fulfil the EWG-machine guidelines.

PED 97/23/EG

In acc. with Article 3 Paragraph (3), "Sound Engineering Practice", of the PED 97/23/EC no CE mark.

	Pipe	
	Table 8 Group 1 dangerous fluids	Table 9 Group 2 non-dangerous fluids
PSR-.. (1/4" - 1")	Art. 3, § 3	Art. 3, § 3
PSR-1132B and PSR-1140B	not deliverable	Art. 3, § 3
PSR-1232B and PSR-1240B	Cat. II	Art. 3, § 3

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should the damage to a device be visible, we recommend a thorough inspection of the delivery packing. In case of damage, please inform your parcel service/ forwarding agent immediately, since they are responsible for damages during transit.

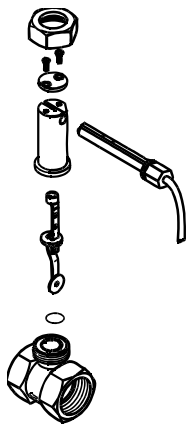
Scope of delivery:

- Paddle Flow Monitor Model: PSR-.. / PSE-..
- Operating Instructions

4. Regulation Use

Series PSR and PSE are used to monitor liquid flow. Instruments are provided with an adjustable limit switch. Only low viscosity fluids that are compatible with the material combination chosen are allowed to be monitored. If using higher viscous media, large deviations in the specified switching range will occur.
The instruments are relatively insensitive to dirt, however large particles may block the paddle, leading to erroneous alarm conditions; likewise, ferritic particles may deposit on the magnet and lead to faulty operation. In case of doubt, please contact the manufacturer.

5. Operating Principle



The KOBOLD flow monitors of series PSE and PSR are used where economical, reliable flow monitors are indicated. Depending on the flow velocity respectively flow rate, the baffle plate is deflected and moves the permanent magnet via the balance arm into the switching range of the reed contact mounted outside of the flow media.
The flat spring, which also serves as a support for the balance arm, forces the baffle plate back to its rest position when there is no flow. KOBOLD baffle plate flow monitors are supplied completely assembled with fitting up to nominal size 40, or for larger nominal pipe sizes - supplied without a pipe length for direct insertion into standard T pieces or fittings. The sealing takes place via PTFE tape.

6. Use in Hazardous Areas (PSx-2)

6.1. General

The paddle flow switch, being a mechanical component, has no inherent potential ignition source. The mounted contact is suitable for usage in Ex-zone IIC and I as an intrinsically safe component.

The measurement units can be used as follows:
In the Zone 0 (Gas-Ex, Cat. 1G) into explosion-group of IIA, IIB and IIC
In the Zone 20 (Dust-Ex, Cat. 1D)
In the Zone 2 (Gas-Ex, Cat. 3G) into explosion group of IIA, IIB and IIC
In the Zone 22 (Dust-Ex, Category 3D)
In the Zone 1 (Gas-Ex, Cat. 2G) into explosion group of IIA, IIB and IIC
In the Zone 21 (Dust-Ex, Category 2D)
In hazardous areas 1 and 2 in underground mining (category M1 and M2)
Regulation usage does not cause any zone inside the fitting or at paddle. Exceptions are possible during start-up and shut-down of the plant.

The Paddle Flow Monitor is filled completely with medium under normal operation. Zone 2 or zone 1 conditions may be obtained for a short time.

The ambient temperature limit area is fixed as follows:

Model	Medium Temperature		P_{max}
	NBR-seal	FPM-seal	
PSR-2132**; PSR-2140	-20....+70 °C	-20...+110 °C	25 bar
all other	-20...+70 °C	-20...+110 °C	100 bar

6.2. Electrical Contact

The paddle flow switch can directly switch intrinsically safe circuits in Ex-zone or may be used in intrinsically safe current circuits in combination with a certified switching amplifier. The electrical connection is explained in chapter 8 “Electrical Connection”.

6.3. Potential equalisation

The all metal flow meters are to be incorporated in potential equalization system of the plant. This is achieved via metallic connection pipe.

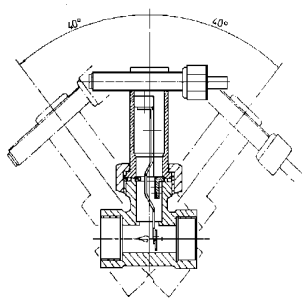
6.4. Electro-Static

The devices are to be protected against electrostatic unloading. The case of the device is to be earthed electro-statically (for example with metal pipes). Besides, the local potential balance is to be established according to local regulations.

The wires must be protected in the installation in the hazardous area “0” against electro-static unloading. This can be done by using conducting pipes and rigid covers.

7. Mechanical Connection

Before installation



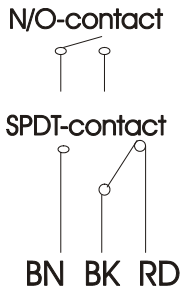
- Please check that the actual flow matches with the switching range of the instrument.
- Ensure that the allowable maximum operating pressure and operating temperature of the instruments will not be exceeded.
- Remove all transport packing and be sure that no packing material is left in the instrument.
- The instrument may be installed in any position (except PSR-..32 / PSR-..40 - for horizontal installation only); however, the top half of the paddle switch must be vertically positioned in relation to the pipe axis, and the arrow on the threaded fitting must match the flow direction.
- For dirty media, it is recommended that the upper housing will be installed as close to vertical as possible, respectively with not more than 40° deviation from vertical. This will prevent dirt from being deposited in the upper housing. When this is not possible, we recommend the instrument to be cleaned more frequently (see maintenance).
- The application of PTFE tape or similar sealant to the connection threads is recommended.
- Check that the connection threads of the pipe are fully sealed.

Attention! Make sure that the supply voltage to the instrument conforms to the value stated on the equipment label. For higher power loads, we recommend our contact protection relay model MSR-10.

The inlet and outlet section needs to be minimum 5 x DN in front of and after the flow meter.

8. Electrical Connection

- Ensure that the electrical supply lines are powerless.
- Connect the connection cable with your supply cable.
- The contact housing is made of glass-fibre reinforced plastic. It is insulated in accordance with VDI 0720 Class II; separate insulation measures are not necessary.



After connecting the external equipment, the instrument is ready for operation.

9. Limit Switches

The instrument is supplied with an adjustable contact. The standard contact, depending on the adjustments can be used either as N/O or N/C switch. The instrument is supplied ex works as a normally open contact. Optionally, the PSR/PSE can be ordered with an SPDT switch.

Contact mode

Depending on the positioning of the adjustable standard switch, the following contact modes are available.

- **Normally open**
  The contact closes when the flow increases and the set point value is reached or exceeded. The switch opens again with falling flow at the minimum value based on the switch hysteresis.

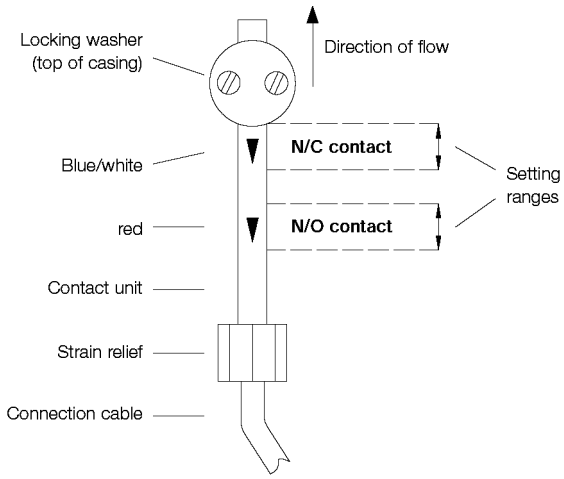
- **Normally closed**
  The contact opens when the flow increases and the set point value is reached or exceeded. The switch closes again with falling flow at the minimum value based on the switch hysteresis.

- **Option: Changeover (SPDT) contact**
  The normally open and normally closed switch modes are simultaneously available from the same position. When retrofitting the standard design with an SPDT switch, the upper switch housing must be replaced at the same time.

Switch Point Adjustment

When adjusting the switch point, the clamp plate in the top of the upper housing must be loosened, enabling the switching unit to be repositioned. For ease of adjustment, the switching unit is marked with a blue, white or red arrow (not with the SPDT switch option). The front edge of the clamp plate serves as the adjustment marker.

- **Normally open contact**
  (standard setting, as shipped)
  The switch range is adjustable in the area of the red arrow. By sliding the switching unit in the direction of flow, the minimum switching value given in the table is achieved. By sliding the switching unit in the opposite direction, the maximum listed switch value is achieved.



- **Normally closed contact**
  The switch range is adjustable in the area of the blue (white) arrow. By sliding the switch unit in the direction of flow, the minimum switch value given in the table is achieved. By sliding the switch unit in the opposite direction, the maximum listed switch value is achieved.

- **Option: Changeover contact**
  For instruments with SPDT switch, no adjustment marker (arrow) is provided on the switch housing.

- To make sure that the SPDT switch is working under optimum conditions, please ensure that the label on the switch housing is facing upward, relative to the clamp plate.

The following options for wiring apply:
Black and brown conductor = contact opens at decreasing flow.
Black and blue conductor = contact closes at decreasing flow.

After successful adjustment, tighten the clamp plate by means of the screws.

Hysteresis

The Hysteresis is defined as the difference between the opening and closing flow values of a contact. For example, the model PSR 11083 with minimal switching adjustment and increasing flow is switching on at 2.3 l/min and will switch off at 1.6 l/min at decreasing flow. Contact hysteresis = 0.7 l/min.

Contact protection
The reed contact may be damaged if the switch ratings are exceeded, especially while switching inductive or capacitive loads. This can cause unsafe conditions. By using a contact protection/isolation relay (e.g.: Model MSR 10), this problem can be overcome and the lifespan and switch rating of the reed contact can be extensively increased.

10. Maintenance

In cases the measured flow medium is not polluted, the PSR/PSE will remain virtually maintenance-free. Ferritic (iron) particles in the medium may deposit on the magnet, which can lead to problems. Bigger dirt particles can lead into blocking of the balance arm. To avoid those conditions, we recommend the installation of a magnet filter (e.g.: Magnet Filter model MFR).
Depending on the amount of dirt present in the medium, we recommend the instrument to be checked and cleaned regularly.

Cleaning of the instrument

- Shut-off the flow through the instrument.
- Ensure that there is no flow through the pipe and that the pipe is empty and not under pressure.
- Loosen the sleeve nut with a wrench (hex size 30) (only PSR-..).
- The upper switch housing and paddle arm can then be removed for cleaning.
- When cleaning the paddle arm, check that the flat spring is not damaged or bent.
- Prior to reinstallation, check that the o-ring is placed correctly in the lower housing. Dirt particles on the o-ring will lead to sealing problems.
- Insert the leaf-spring/paddle assembly into the lower housing and replace the upper housing. Note that the suspension disk of this assembly must be correctly positioned within the recesses of the upper and lower housings.
- Tighten the sleeve nut. Check that the upper half does not turn with the nut.
- Check seal tightness.

11. Technical Information

11.1. General

Tolerance of switching points:	±15 %
Max. medium temp. standard:	110 °C
Use in hazardous area:	-20…+70 °C (NBR – seal)
	-10…+110 °C (FPM – seal)
Max. pressure:	25 bar (PSR-1132.., PSR-1140..)
	100 bar (all others)
Protection:	IP 65
Preferred mounting position:	upright, horizontal
	PSE-1x52/PSE 1x14: only upright
Inlet/outlet:	5 x DN in each case

Electrical Details
Bistable reed contact

R N/O / N/C contact Standard
max. 2 A, max. 230 $V_{AC/DC}$, max. 40 W, 40 VA

U Changeover contact Standard
max. 0,5 A, max. 150 $V_{AC/DC}$, max. 20 W, 20 VA

C N/O / N/C contact
2A, 30 V_{AC}, 0,18 A, 230 V_{AC}, max. 40 W

D Changeover contact
0,13 A, 150 V_{AC}, 0,5 A, 40 V_{AC}, max. 20 W

ATEX and IECEx

R, U N/O / N/C contact and Changeover contact
max. 2 A, max. 60 $V_{AC/DC}$, max. 40 W, 20 VA
Ex-range: II 1G Ex ia I M1 Ex ia I Ma
II 1G Ex ia IIC T4/T3 Ga
IECEx II 1D Ex ia IIIC IP6x
T110 °C / 150 °C Da

Average electrical switch contact life (MTTF):

at max. electrical load:	10^5 switching operations
at half load (<10% max. load):	$5*10^7$ switching operations
at low load (<10V/<1mA):	10^8 switching operations

Material

	PSR-11… / PSE-11...	PSR-12… / PSE-12...
Case	brass 58	stainless steel 1.4301
Baffle plate	stainless steel 1.4301	stainless steel 1.4301
Leaf spring	stainless steel 1.4310	stainless steel 1.4310
Balance arm	stainless steel 1.4310	stainless steel 1.4310
Sleeve	brass 58	stainless steel 1.4301
Magnet	oxide ceramics	oxide ceramics
Seal	NBR	FPM
Contact tube	polyamide, glass-fibre-reinforced	
Cable	PVC (Standard 1,5m)	

11.2. Model Label for IEC-Ex-Version

KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Deutschland
Model: PS*-** *** *** ** CE 0158 Year of Production
F-Nr. ****
BVS 09 ATEX C ***
IEC EX BVS 09.****
Ex I M1 Ex ia I Ma
Ex II 1G Ex ia IIC T4/T3 Ga
Ex II 1D Ex ia IIIC IP65 T110 °C / T150 °C Da
-20 °C ≤ Ta ≤ 70 °C / 110 °C

11.3. Model Code

PS*-** *** *** **
PSa-bc def ghi jk

a= Design: E=Insert Version, R=Inline Version
b= Version: 1=Standard, 2=IEC EX-Version
c= Material Combination, see Materials Chart
def= Range/Paddle, see Order Codes
ghi= Process Connection, see Order Codes
j= Contact Version: R=N/O-N/C, U=SPDT
k= Cable Version, see Order Codes

12. Order Codes

Special switching ranges[1]		Nominal size	Qmax. L/min. water	Model		Connection	Contact	Cable Length
Rising flow rate L/min. water	Falling flow rate L/min. water			Material brass	Material stainless steel			
2,3 - 4,7	1,6 - 4,6	DN 8	30	**PSR-1108 3...**	**PSR-1208 3...**	R08= G 1/4 N08= 1/4 NPT	**R** = N/C contact (Standard CE) **C** = N/C contact (cCSAus) **U** = Changeover contact (Standard CE) **D** = Changeover contact (cCSAus)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P =** PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]
2,3 - 5,5	2,8 - 6,0	DN 10	40	**PSR-1110 3..**	**PSR-1210 3...**	R10= G 3/8 N10= 3/8 NPT		
2,5 - 6,4	1,9 - 6,3	DN 15	45	**PSR-1115 3...**	**PSR-1215 3...**	R15= G 1/2 N15= 1/2 NPT		
7,7 - 13,4	5,9 - 13,0	DN 20	80	**PSR-1120 6..**	**PSR-1220 6..**	R20= G3/4 N20= 3/4 NPT		
7,4 - 18,2	7,3 - 17,2	DN 25	130	**PSR-1125 8...**	**PSR-1225 8...**	R25= G 1 N25= 1 NPT		
19,7 - 36,8	20,0 - 32,4	DN 32	160	**PSR-1132 B...**	**PSR-1232 B...**	R32= G 1 1/4 N32= 1 1/4 NPT		
23,1 - 57,9	23,5 - 53,1	DN 40	300	**PSR-1140 B**	**PSR-1240 B...**	R40= G 1 1/2 N40= 1 1/2 NPT		

Special switching ranges[1]		Nominal size	Qmax L/min. water	Model		Connection	Contact	Cable Length
Rising flow rate L/min. water	Falling flow rate L/min. water			Material brass	Material stainless steel			
4,7 - 6,5	3,4 - 6,1	DN 8	30	**PSR-1108 2..**	**PSR-1208 2..**	**R08=** G 1/4 **N08=** 1/4 NPT	**R** = N/C contact (Standard CE) **C** = N/C contact (cCSAus) **U** = Changeover contact (Standard CE) **D** = Changeover contact (cCSAus)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P =** PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]
5,7 - 7,7	4,5 - 7,6	DN 8	30	**PSR-1108 1..**	**PSR-1208 1..**			
5,5 - 7,1	4,4 - 6,9	DN 10	40	**PSR-1110 2...**	**PSR-1210 2..**	**R10=** G 3/8 **N10=** 3/8 NPT		
6,6 - 8,7	5,6 - 8,5	DN 10	40	**PSR-1110 1...**	**PSR-1210 1..**			
8,3 - 10,7	7,0 - 10,3	DN 15	45	**PSR-1115 2...**	**PSR-1215 2..**	**R15=** G 1/2 **N15=** 1/2 NPT		
9,2 - 12,4	8,0 - 11,8	DN 15	45	**PSR-1115 1...**	**PSR-1215 1..**			
17,8 - 24,9	14,9 - 23,3	DN 20	80	**PSR-1120 5...**	**PSR-1220 5..**	**R20=** G3/4 **N20=** 3/4 NPT		
20,4 - 30,0	16,3 - 28,3	DN 20	80	**PSR-1120 4...**	**PSR-1220 4..**			
34,6 - 48,3	30,6 - 46,7	DN 20	80	**PSR-1120 1...**	**PSR-1220 1..**	**R25=** G 1 **N25=** 1 NPT		
17,7 - 26,8	12,8 - 24,7	DN 25	130	**PSR-1125 7...**	**PSR-1225 7..**			
26,0 - 36,3	21,4 - 34,1	DN 25	130	**PSR-1125 5...**	**PSR-1225 5..**			
29,8 - 42,8	24,7 - 40,9	DN 25	130	**PSR-1125 4...**	**PSR-1225 4..**			
47,6 - 67,2	43,9 - 64,9	DN 25	130	**PSR-1125 1...**	**PSR-1225 1..**			

Standard switching ranges[1]		for pipes with diameter (mm)	Qmax m^3/h water	Model		Connection	Contact	Cable Length
Rising flow rate L/min. water	Falling flow rate L/min. water			Material brass	Material stainless steel			
68 - 90	61 - 83	50	30	**PSE-1149 8...**	**PSE-1249 8...**	**R15=** G 1/2 **N15=** 1/2 NPT	**R** = N/C contact (Standard CE) **C** = N/C contact (cCSAus) **U** = Changeover contact (Standard CE) **D** = Changeover contact (cCSAus)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P =** PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]
183 - 250	170 - 233	80	100					
320 - 400	300 - 383	100	150					
700 - 917	667 - 900	150	200					
50 - 62	43 - 58	50	30	**PSE-1152 0...**	**PSE-1252 0...**	**R15=** G 1/2 **N15=** 1/2 NPT		
155 - 183	143 - 167	80	100					
217 - 267	200 - 250	100	150					
558 - 600	517 - 592	150	200					
92 - 113	70 - 103	100	150	**PSE-1114 9...**	**PSE-1214 9...**	**R15=** G 1/2 **N15=** 1/2 NPT		
200 - 283	167 - 233	150	200					
383 - 533	333 - 467	200	200					

[1] Listed values are valid only for horizontal installation
[2] only for N/C contact “R” and “C”
[3] Length as described

Order Details ATEX- and IECEx-Version (Example: PSR-2108 3 R08 R1)

Standard switch ranges[1]		Nominal size	Qmax. L/min. water	Model*		Connection	Contact	Cable Length	Sealing
Rising flow rate L/min. water	Falling flow L/min. water			Material brass	Material st. steel				
2,3 - 4,7	1,6 - 4,6	DN 8	30	**PSR-2108 3...**	**PSR-2208 3...**	**R08=** G 1/4 **N08=** 1/4 NPT	**R=** N/C Contact (ATEX, IECEx) **U** = Changeover contact (ATEX, IECEx)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P =** PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]	without = NBR H=FPM
2,8 - 6,0	2,3 – 5,5	DN 10	40	**PSR-2110 3..**	**PSR-2210 3...**	**R10=** G 3/8 **N10=** 3/8 NPT			
2,5 - 6,4	1,9 - 6,3	DN 15	45	**PSR-2115 3...**	**PSR-2215 3...**	**R15=** G 1/2 **N15=** 1/2 NPT			
7,7 - 13,4	5,9 - 13,0	DN 20	80	**PSR-2120 6..**	**PSR-2220 6..**	**R20=** G3/4 **N20=** 3/4 NPT			
7,4 - 18,2	7,3 - 17,2	DN 25	130	**PSR-2125 8...**	**PSR-2225 8...**	**R25=** G 1 **N25=** 1 NPT			
19,7 - 36,8	20,0 - 32,4	DN 32	160	**PSR-2132 B...**	**PSR-2232 B...**	**R32=** G 1 1/4 **N32=** 1 1/4 NPT			
23,1 - 57,9	23,5 - 53,1	DN 40	300	**PSR-2140 B…**	**PSR-2240 B...**	**R40=** G 1 1/2 **N40=** 1 1/2 NPT			

Special switch ranges [1]		Nominal size	Qmax. L/min. water	Model		Connection	Contact	Cable Length	Sealing
Rising flow rate L/min. Wasser	Falling flow rate L/min. Wasser			Material Brass	Material st. steel				
4,7 - 6,5	3,4 - 6,1	DN 8	30	**PSR-2108 2..**	**PSR-2208 2..**	**R08**= G 1/4 **N08**= 1/4 NPT	**R**= N/C Contact (ATEX, IECEx) **U** = Changeover contact (ATEX, IECEx)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P** = PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]	without=NBR H=FPM
5,7 - 7,7	4,5 - 7,6	DN 8	30	**PSR-2108 1..**	**PSR-2208 1..**				
5,5 - 7,1	4,4 - 6,9	DN 10	40	**PSR-2110 2...**	**PSR-2210 2..**	**R10**= G 3/8 **N10**= 3/8 NPT			
6,6 - 8,7	5,6 - 8,5	DN 10	40	**PSR-2110 1...**	**PSR-2210 1..**				
8,3 - 10,7	7,0 - 10,3	DN 15	45	**PSR-2115 2...**	**PSR-2215 2..**	**R15**= G 1/2 **N15**= 1/2 NPT			
9,2 - 12,4	8,0 - 11,8	DN 15	45	**PSR-2115 1...**	**PSR-2215 1..**				
17,8 - 24,9	14,9 - 23,3	DN 20	80	**PSR-2120 5...**	**PSR-2220 5..**	**R20**= G3/4 **N20**= 3/4 NPT			
20,4 - 30,0	16,3 - 28,3	DN 20	80	**PSR-2120 4...**	**PSR-2220 4..**				
34,6 - 48,3	30,6 - 46,7	DN 20	80	**PSR-2120 1...**	**PSR-2220 1..**	**R25**= G 1 **N25**= 1 NPT			
17,7 - 26,8	12,8 - 24,7	DN 25	130	**PSR-2125 7...**	**PSR-2225 7..**				
26,0 - 36,3	21,4 - 34,1	DN 25	130	**PSR-2125 5...**	**PSR-2225 5..**				
29,8 - 42,8	24,7 - 40,9	DN 25	130	**PSR-2125 4...**	**PSR-2225 4..**				
47,6 - 67,2	43,9 - 64,9	DN 25	130	**PSR-2125 1...**	**PSR-2225 1..**				

Standard switch ranges[1]		For pipes with diameter [mm]	Qmax. m³/h water	Model		Connection	Contact	Cable Length	Sealing
Rising flow rate L/min. water	Falling flow rate L/min. water			Material brass	Material st. steel				
68 - 90	61 - 83	50	30	**PSE-2149 8...**	**PSE-2249 8...**	**R15**= G 1/2 **N15**= 1/2 NPT	**R**= N/C Contact (ATEX, IECEx) **U** = Changeover contact (ATEX, IECEx)	**PVC-cable** **1** = 1,5m (Standard) **2** = 2,0m[2] **4** = 3,0m[2] **6** = 4,0m[2] **8** = 5,0m[2] **P** = PVC cable, special length[3] **S** = silicone cable[2,3] **G** = yellow PUR-cable[2,3]	without=NBR H=FPM
183 - 250	170 - 233	80	100						
320 - 400	300 - 383	100	150						
700 - 917	667 - 900	150	200						
50 - 62	43 - 58	50	30	**PSE-2152 0...**	**PSE-2252 0...**	**R15**= G 1/2 **N15**= 1/2 NPT			
155 - 183	143 - 167	80	100						
217 - 267	200 - 250	100	150						
558 - 600	517 - 592	150	200						
92 - 113	70 - 103	100	150	**PSE-2114 9...**	**PSE-2214 9...**	**R15**= G 1/2 **N15**= 1/2 NPT			
200 - 283	167 - 233	150	200						
383 - 533	333 - 467	200	200						

[1] Listed values are valid only for horizontal installation
[2] only for N/C contact “R” and “C”
[3] Length as described

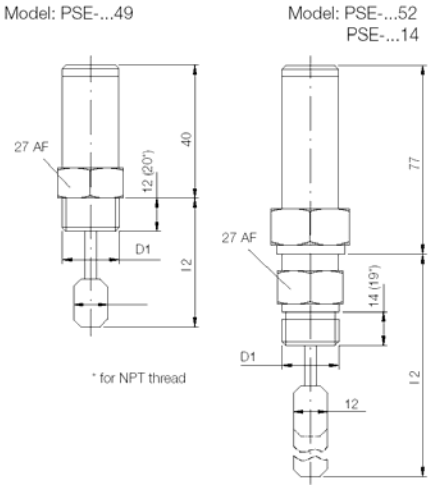
13. Recommended Spare Parts

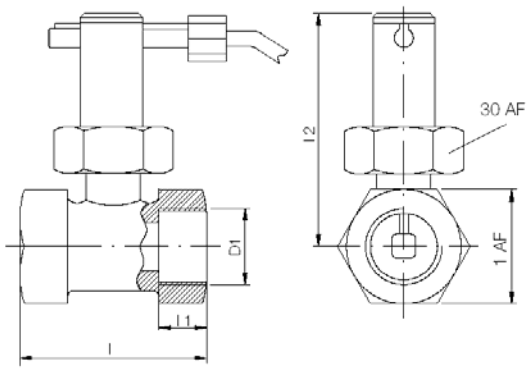
1.) Paddle (only PSR-…)
2.1) Spare Normally open contact
2.2) Spare Changeover contact
2.3) Conversion kit: N/O for Changeover contact (only PSR-11...) consisting of top (sleeve) brass + 1 Changeover contact
2.4) Conversion kit: N/O for Changeover contact (only PSR-12...) consisting of top (sleeve) stainless steel + 1 Changeover contact
3.1) FPM O-Rings
3.2) NBR O-Rings

14. Dimensions

Model: PSE-..49 PSE-..52
PSE-..14

Model: PSR





Model	D1	L2 (mm)
PSE-..52	R 1/2	52
PSE-..14	R 1/2	114

Model	D1	L (mm)	L1 (mm)	L2 (mm)	SW 1
PSR-..08	G 1/4	50	10	80	27
PSR-..10	G 3/8	50	10	80	27
PSR-..15	G 1/2	50	10	80	27
PSR-..20	G 3/4	50	10	81,5	32
PSR-..25	G 1	50	10	84	2739
PSR-..32	G 1 1/4	50	10	112	2746
PSR-..40	G 1 1/2	50	10	119	55

15. Declaration of Conformance

We, Kobold-Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

Paddle Flow Switch Model: PSR-x / PSE-x

to which this declaration relates is in conformity with the standards noted below:

DIN EN 61010-1
Safety requirements for electrical equipment for measurement, control and laboratory use.

DIN 60529, DIN VDE 0470-1
Protection through housing (IP-code)
for PSR/PSE-2x

Also the following EWG guidelines are fulfilled:

2006/95/EC Low Voltage Directive

94/9/EG
Equipment and Protective systems intended for
use in potentially Explosive Atmospheres (ATEX 100a)
Quality Management Production
Certificate number: DMT 03 ATEX ZQS / E 110
Notified body: Deutsche Montan Technologie
Identification number: 0158

for PSR-1232 and PSR-1240B

97/23/EG PED
Category II, Table 8, pipes,
dangerous fluids
Module D1, mark CE0098
notified body: Germanischer Lloyd Germany
Certification number: 39 362-08 HH

Hofheim, 16. Jan. 2007

H. Peters
General Manager

M. Wenzel
Proxy Holder

16. Examination Certificate

DEKRA

(1) **EG-Baumusterprüfbescheinigung**

(2) **- Richtlinie 94/9/EG -**
Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

(3) **BVS 09 ATEX E 102**

(4) **Gerät:** **Strömungswächter Typ PS*-** *** *** ***

(5) **Hersteller:** **KOBOLD Messring GmbH**

(6) **Anschrift:** **65719 Hofheim/Ts.**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der DEKRA EXAM GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 09.2122 EG niedergelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

IEC 60079-0:2007	Allgemeine Anforderungen	EN 61241-0:2006	Allgemeine Anforderungen
EN 60079-11:2007	Eigensicherheit ´i´	EN 61241-11:2006	Eigensicherheit ´iD´
EN 50303:2000	Kategorie-M1-Geräte		
EN 60079-26:2007	Gerätegruppe II Kategorie 1G		

(10) Falls das Zeichen „X" hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und Inverkehrbringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

I M1 **Ex ia I Ma**
II 1G **Ex ia IIC T4/T3 Ga**
II 1D **Ex ia IIIC IP6x T110 °C / 150 °C Da**

DEKRA EXAM GmbH
Bochum, den 04. August 2009

Zertifizierungsstelle Fachbereich

Seite 1 von 2 zu BVS 09 ATEX E 102
Dieses Zertifikat darf nur vollständig und unverändert weiterverbreitet werden.
DEKRA EXAM GmbH Dinnendahlstraße 9 44809 Bochum Telefon 0234/3696-105 Telefax 0234/3696-110 E-mail zs-exam@dekra.com

DEKRA

(13) Anlage zur

(14) # EG-Baumusterprüfbescheinigung

BVS 09 ATEX E 102

(15) 15.1 Gegenstand und Typ

Strömungswächter Typ PS*-** *** *** ***

15.2 Beschreibung

Der Strömungswächter, der in eigensicheren Stromkreisen als „Einfaches elektrisches Betriebsmittel" bzw. in eigensicheren elektrischen Anlagen der Gruppe I als Zubehör verwendet wird, dient zur Überwachung von Strömungen und enthält nur Bauteile, die die Zündschutzart „Eigensicherheit" nicht beeinträchtigen.

Der Strömungswächter besteht aus einem Metallgehäuse, in dem ein Reedschalter vollständig vergossen untergebracht ist. Dieser Reedschalter wird durch einen Dauermagneten betätigt, der an einem Paddel befestigt ist. Dieses Paddel wird durch die Strömung des Mediums ausgelenkt.

Der elektrische Anschluss erfolgt über eine fest angeschlossene Leitung.

15.3 Kenngrößen

Schaltspannung	Ui	AC/DC 60 V
Schaltstromstärke	Ii	2 A
Schaltleistung	Pi	40W / 20VA
Umgebungstemperaturbereich	Ta	
bei Typ PS*-** *** *** **H		-20 °C bis +110 °C
bei allen anderen Typen		-20 °C bis +70 °C
Interne Kapazität	Ci	vernachlässigbar
Interne Induktivität	Li	vernachlässigbar

(16) Prüfprotokoll

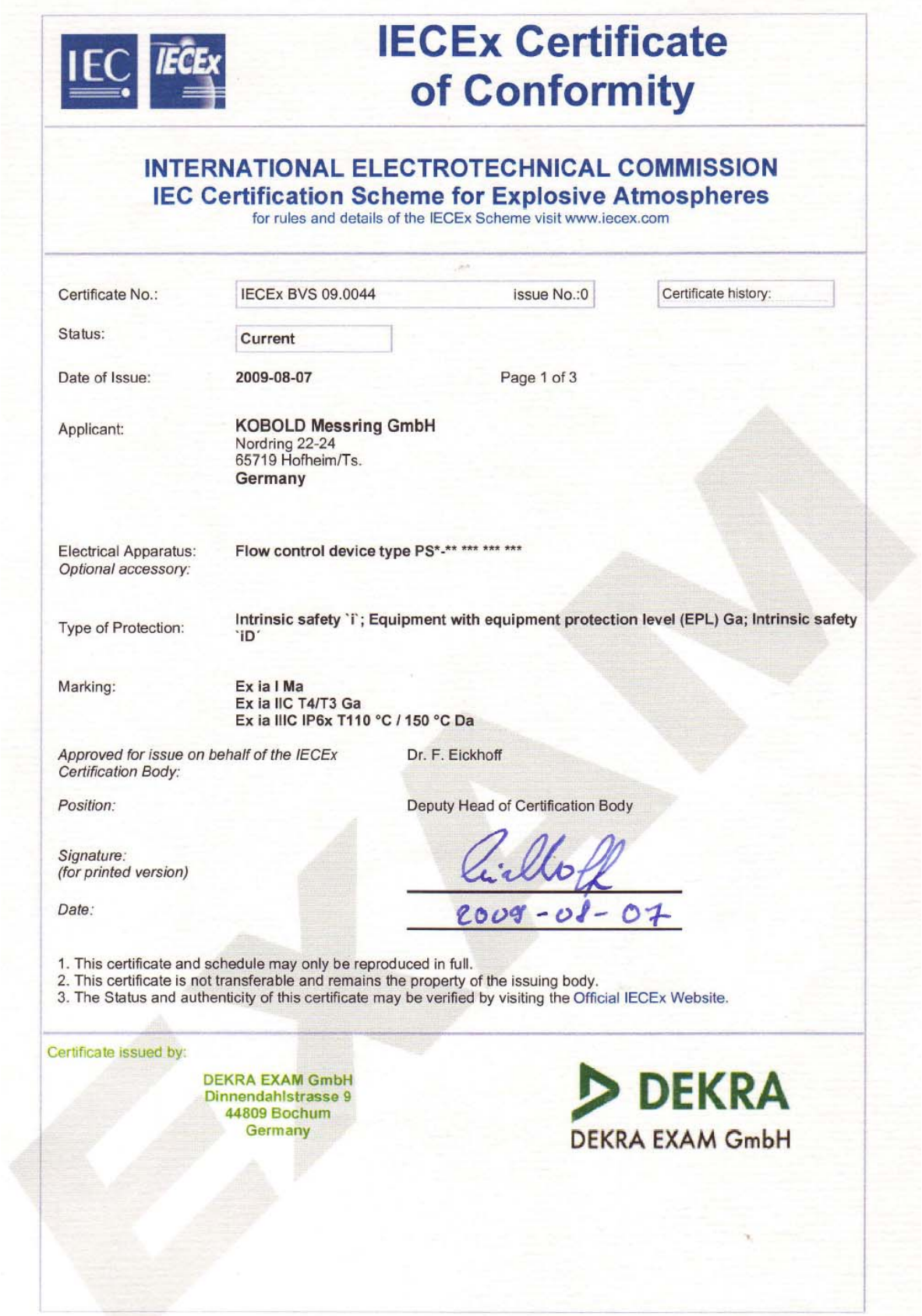
BVS PP 09.2122 EG, Stand 04.08.2009

(17) Besondere Bedingungen für die sichere Anwendung

Entfällt

Dieses Zertifikat darf nur vollständig und unverändert weiterverbreitet werden.
DEKRA EXAM GmbH Dinnendahlstraße 9 44809 Bochum Telefon 0234/3696-105 Telefax 0234/3696-110 E-mail zs-exam@dekra.com

17. IECEx Certificate



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx BVS 09.0044 issue No.:0	Certificate history:
Status:	Current	
Date of Issue:	2009-08-07 Page 1 of 3	
Applicant:	**KOBOLD Messring GmbH** Nordring 22-24 65719 Hofheim/Ts. **Germany**	
Electrical Apparatus: *Optional accessory:*	**Flow control device type PS*-** *** *** ***	
Type of Protection:	**Intrinsic safety `i`; Equipment with equipment protection level (EPL) Ga; Intrinsic safety `iD´**	
Marking:	**Ex ia I Ma** **Ex ia IIC T4/T3 Ga** **Ex ia IIIC IP6x T110 °C / 150 °C Da**	
Approved for issue on behalf of the IECEx Certification Body:	Dr. F. Eickhoff	
Position:	Deputy Head of Certification Body	
Signature: *(for printed version)*	Eickhoff	
Date:	2009-08-07	

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany

DEKRA
DEKRA EXAM GmbH

IECEx Certificate of Conformity

Certificate No.: IECEx BVS 09.0044

Date of Issue: **2009-08-07** Issue No.: **0**

Manufacturer: **KOBOLD Messring GmbH**
Nordring 22-24
65719 Hofheim/Ts.
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2007-10 Edition: 5	Explosive atmospheres - Part 0:Equipment - General requirements
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26 : 2006 Edition: 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
IEC 61241-0 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241-11 : 2005 Edition: 1	Electrical apparatus for use in the pressence of combustible dusts - Part 11: Protection by intrinsic safety 'iD'

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/BVS/ExTR09.0038/00

Quality Assessment Report:
DE/BVS/QAR09.0001/01

IECEx Certificate of Conformity

Certificate No.: IECEx BVS 09.0044

Date of Issue: **2009-08-07** Issue No.: **0**

Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

General product information

Paddle Flow Monitor type PS*-** *** *** ***
Instead of the *** in the complete denomination letters and numerals will be inserted which characterize modifications.

Description

The flow monitor, which is used as "Simple apparatus" in intrinsically safe circuits resp. as "accessory" in Group I intrinsically safe systems, is used for detection of fluid flow and comprises only components which do not effect intrinsic safety.
The flow monitor consists of a metal enclosure, in which a reed contact is completely encapsulated. This reed contact will be operated by a permanent magnet which is mounted on a paddle; this paddle will be moved by the flow medium. The electrical connection is carried out by a permanently connected cable. For Zone 0 application this cable must be mounted in a way that electrostatic discharge is not possible.

Parameters

Switched voltage	Ui	AC/DC	60	V
Switched current	Ii		2	A
Switched power	Pi	40W / 20VA		
Ambient temperature range	TA			
for type PS*-** *** *** **H		-20 °C up to +110 °C		
for all other types		-20 °C up to +70 °C		
Internal capacitance	Ci	negligible		
Internal inductance	Li	negligible		

CONDITIONS OF CERTIFICATION: NO

EXAM